

SUPPORT EQUIPMENT RECOMMENDATION DATA

CONTRACTOR / FSCM GRUMMAN AEROSPACE CORP / 26512  
CONTRACT NO. N00019-87-C-001  
END ARTICLE IDENT. AIRCRAFT E2  
SE PART / MODEL NO. / TYPE DESIG. 123SAV50000-E360-2  
FIG. 1a PAGE NO. 1  
REVISION NO. E360  
DATE ORIGINAL 3/26/88

PART I FUNCTIONAL ANALYSIS

THIS SERD REPRESENTS AN RTBS CONFIGURATION WHICH WILL BE CAPABLE AT DEPOT LEVEL, OF SUPPORTING AN/APS-125, AN/APS-138, AN/APS-139, AND AN/APS-145 RADAR SYSTEM AS FOLLOWS:

- \* FAULT DETECTION AND ISOLATION: PROVIDE THE CAPABILITY, IN CONJUNCTION WITH ASSOCIATED TEST EQUIPMENT AND SELECTED RADAR WRA’S SUPPLIED WITH RADAR TEST BENCH SET (SEE TABLE I) TO ENABLE TESTING ALIGNMENT AND FAULT ISOLATION TO THE LOWEST REPLACEABLE PART OF THE RADAR WRAs.
- \* ALIGNMENT: PROVIDE THE CAPABILITY IN CONJUNCTION WITH ASSOCIATED TEST EQUIPMENT, TO MAKE ACCURATE AND RAPID ALIGNMENT OF THE WRAs AND THEIR SRAs.
- \* REPAIR: PROVIDE THE CAPABILITY IN CONJUNCTION WITH ASSOCIATED TEST EQUIPMENT, TO ENABLE REPAIR OF ALL SHOP (I OR D LEVEL) REPAIRABLE PARTS.

ELECTRICAL REQUIREMENTS PROVIDE THE FOLLOWING FOR EACH WRA AND SRA:

1. PRIMARY AND SECONDARY POWER
2. INPUT STIMULI (RF, IF, VIDEO, AC, DC)
3. OUTPUT LOADS (RF, VIDEO, DC)
4. PROVIDE THE CAPABILITY FOR WRA MEASUREMENT AND MONITORING OF ALL NECESSARY ELECTRICAL PARAMETERS.

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FIGURE 1a

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PART I FUNCTIONAL ANALYSIS (CONT'D)

ENVIRONMENTAL REQUIREMENTS - PROVIDE EACH WRA AND SRA AS REQUIRED WITH

- 1. COOLED AIR AND/OR LIQUID COOLANT.
- 2. NITROGEN PRESSURIZATION FOR HIGH VOLTAGE COMPONENTS
- 3. CAPABILITY FOR READY MEASUREMENT, AND MONITORING OF ALL NECESSARY ENVIRONMENTAL PARAMETERS.

MOUNTING REQUIREMENT - PROVIDE FOR BENCH MOUNTING OF EACH OF THE WRA’s WITH PROVISIONS FOR EASY REMOVAL AND INSTALLATION OF THE WRA AND/OR ITS SRA. IN THE TEST POSITION, PROVISIONS SHALL BE MADE TO SECURE AND EASILY MOVE THE ASSEMBLY UNDER TEST.

SAFETY REQUIREMENTS - MAKE SAFETY PROVISIONS FOR EQUIPMENT AND OPERATING PERSONNEL,

WRA OPERATING TIME - MAKE PROVISIONS TO MINIMIZE THE OPERATING TIME OF WRA’s, NOT DIRECTLY UNDER TEST, OR REQUIRED FOR THEIR OPERATION.

HIGH POWER REQUIREMENTS - HIGH POWER TESTING OF THE DUMMY LOAD, ELECTRICAL

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FIGURE 1a

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### PART I FUNCTIONAL ANALYSIS (CONT'D)

THE RADAR TEST BENCH SET (RTBS), IN CONJUNCTION WITH ASSOCIATED TEST EQUIPMENT, PROVIDES FOR:

1. THE FAULT INDICATION OF THE RADAR, WRAs AND FAULT ISOLATION TO THE LOWEST REPLACEABLE PART.
2. ALIGNMENT OF WRAs AND SRAs.
3. REPAIR OF ALL SHOP (DEPOT LEVEL) REPAIRABLE PARTS.

#### DESCRIPTION SERVICES REQUIREMENTS

- A. ELECTRICAL:
1. AC, 3 PHASE, 115 VOLTS + 1% 400 Hz + 5%, 30KVA.
  2. AC, 1 PHASE, 60 Hz TO CONVENIENCE OUTLET BOX FOR USE OF TEST EQUIPMENT 3.5 KVA .
  3. DC, 27 + 2 VOLTS, 37 AMPS.
- B. COOLING:
1. COOLING AIR - APPROXIMATELY 20 lb/min AT 55 DEGREES F MAX AND 4 INCH STATIC MIN PRESS. 90% FILTERED, (50 MICRONS)
  2. COOLING WATER - APPROXIMATELY 17 GALLONS PER MINUTE (MIN) AT 105 DEGREES F MAX AT 20PSIG (MIN) AND 150 PSIG (MAX) (FRESH)

THERE IS NO KNOWN ITEM IN THE GOVERNMENT INVENTORY THAT MEETS THE ABOVE REQUIREMENT.

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PART II RECOMMENDED SOLUTION

THE RTBS, THROUGH ITS CABLE HARNESS GROUPS AND WRA/SRA EXTENDERS, PROVIDES THE PRIMARY POWER TO EACH WRA AND ELECTRICAL STIMULI AND LOADING FOR EACH WRA AND SRA.

THE RTBS PROVIDES THE AIR AND/OR LIQUID COOLING, AND NITROGEN GAS PRESSURIZATION FOR ANY OF ITS WRAs OR SRAs, OR A HIGH POWER TRANSMISSION LINE SECTION (INCLUDING THOSE THAT ARE PART OF RTBS) REQUIRING THIS PROVISION. THE NITROGEN GAS WILL BE SUPPLIED BY THE PUMP, ROTARY, POWER DRIVEN HD-902A/APS-120.

THE RTBS PROVIDES THE TEST POINTS AND PANEL METERS FOR MEASURING AND MONITORING ALL ELECTRICAL AND ENVIRONMENTAL PARAMETERS OF THE WRAs.

THE RTBS IS SUPPLIED WITH HOLDING FIXTURES FOR THE RADAR WRAs UNDER TEST WITH PROVISIONS FOR EACH REMOVAL AND INSTALLATION OF THE WRA, AND READY ACCESS AND EXTENSION AND/OR REMOVAL OF SRAs.

THE RTBS PROVIDES OVERLOAD PROTECTIVE CIRCUITRY FOR THE PROTECTION OF THE WRAs AND TEST EQUIPMENT.

THE RTBS PROVIDES SWITCHING AND LOGIC CIRCUITRY TO ACTIVATE ONLY THOSE WRAs NECESSARY FOR THE OPERATION OF THE WRA UNDER TEST.

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FIGURE 1a

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PART II RECOMMENDED SOLUTION (CONT'D)

THE RTBS MUST BE USED IN CONJUNCTION WITH THE FOLLOWING ASSOCIATED TEST EQUIPMENT (OR EQUIVALENT), ADAPTER SETS, TOOLS AND POWER AMPLIFIER DOLLY (NOT SUPPLIED AS PART OF THIS SERD).

TEST EQUIPMENT

THE ASSOCIATED TEST EQUIPMENT REQUIRED INCLUDES, BUT IS NOT LIMITED TO THE TEST EQUIPMENT, OR EQUIVALENT LISTED BELOW. THE LIST IS INCLUDED IN THIS SERD FOR REFERENCE ONLY, AND WILL NOT BE UPDATED AS A RESULT OF FURTHER DEFINITION RESULTING FROM COMPATIBILITY TESTING.

QTY	MANUFACTURER	PART NUMBER	DESCRIPTION
1	ALFORD	1026C-4	SLOTTED LINE
2	AMPHENOL	35725-91	91 Ohm TERMINATION
2	NARDA	370NF	50 Ohm TERMINATION
4	NARDA	370NM	50 Ohm TERMINATION
2	TEKTRONIX	011-0049-01	50 Ohm TERMINATION
4	TROMPETER	TPM-50	50 Ohm TERMINATION
4	ANZAC	H-9N	JUNCTION HYBRID, 50 Ohm
2	FLUKE	8800A/AA	DIGITAL VOLTMETER
1	BALLANTINE LAB	323-20-MOD40	TRUE RMS VOLTMETER

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FIGURE 1a

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PART II RECOMMENDED SOLUTION (CONT'D)

SYSTEM INTERCONNECTING CABLES:

THE CABLES PROVIDE FOR THE INTERCONNECTION BETWEEN THE RTBS AND THE RADAR WRA.

WRA INTERCONNECTING CABLES:

THE CABLES PROVIDE FOR THE INTERCONNECTION BETWEEN BENCH WRAs.

EQUIPMENT INTERCONNECTION CABLES:

THE CABLES PROVIDE FOR THE INTERCONNECTION BETWEEN ASSOCIATED TEST EQUIPMENT AND THE RADAR WRAs.

THE RTBS INCLUDES THE RADAR SET WRAs LISTED IN TABLE I:

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PART II RECOMMENDED SOLUTION (CONT'D)

TABLE I

AN/APS-145 RADAR SET WRAs SUPPLIED WITH RTBS

- DISTRIBUTION BOX J-3010/APS-120 (A43)
- METER, RADIO FREQUENCY POWER ME-413/APS-120 (A17)
- COUPLER, DIRECTIONAL CU-1999/APS-120 (A20)
- PUMP, ROTARY POWER DRIVE HD-902A/APS-120 (A25)
- PRESSURIZER, ELECTRONIC EQUIP HD-901/APS-120 (A33)
- MODULATOR, RADAR MD-1169/APS-139 (A30)
- POWER SUPPLY PP-6618A/APS-120 (A37)
- POWER SUPPLY PP-6616/APS-120 (A24)
- TRANSFORMER ASSEMBLY TF-555/APS-120 (A22)
- POWER SUPPLY PP-6619/APS-120 (A42)
- NETWORK, PULSE FORMING MX-8945/APS-120 (A23)
- REACTOR MX-8946/APS-120 (A34)
- POWER SUPPLY PP-6617/APS-120 (A35)
- AMPLIFIER, TRIGGER PULSE AM-6513/APS-120 (A31)
- FILTER, DIRECT CURRENT POWER F-1308/APS-120 (A41)
- TRANSFORMER ASSEMBLY TF-556/APS-120 (A36)
- MODULATOR, RADAR MD-1170/APS-139 (A32)
- DUMMY LOAD, ELECTRICAL DA-606/APS-120 (A26)
- PULSE GENERATOR 0-1835/APS-145 (A)
- RADAR SET CONTROL C-11621/APS-145 (A11)
- PERFORMANCE INDICATOR ID-2383/APS-145 (A12)
- FERRITE ISOLATOR 2J-9436/APS-139 (AT1)

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PART II RECOMMENDED SOLUTION (CONT'D)

NOTES:

- (1) AMPLIFIER, RADIO FREQUENCY AM-6412/APS-120 WILL BE OBTAINED FROM ON-SITE QUANTITIES TO PERFORM HIGH POWER TESTING AND FAULT ISOLATION OF THE DUPLEXER CU-1998/APS-120; DUMMY LOAD, ELECTRICAL DA-606/APS-120 WRAs.
- (2) THE SIMULATOR, CONTROL VOLTAGE SM-726/APS-125 AND SM-842/APS-145 WRAs WILL BE OBTAINED FROM ON-SITE QUANTITIES TO BE USED AS TEST FIXTURES FOR TESTING AND FAULT ISOLATION OF THEIR ASSOCIATED SRAs TO THE COMPONENT LEVEL.

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FIGURE 1a



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PART II RECOMMENDED SOLUTION (CONT'D)

ADAPTER SET(S)

CONSISTING OF SMALL ITEMS SUCH AS, TEE CONNECTORS, CONNECTOR-TO-CONNECTOR TYPE ADAPTERS AND RF TRANSITIONS. THE ITEMS ARE CONTAINED IN THE RADAR ADAPTER ACCESSORY SET, PN 123SAV52060-E329 (SERD 4810).

TOOLS

SPECIAL HOLDING FIXTURES AS IDENTIFIED DURING CERTAIN WRA TEST PROCEDURES ARE PROVIDED AS PART OF THE RTBS ASSEMBLY.

POWER AMPLIFIER DOLLY

THE DOLLY (NOT SUPPLIED WITH THE RTBS) PROVIDES THE MOUNTING STRUCTURE FOR SECURING (WITH QUICK RELEASE HARDWARE) RADIO FREQUENCY AMPLIFIER AM-6412/APS-120 TO THE RTBS DURING MAINTENANCE AND STORAGE OF THE ON-SITE RADIO FREQUENCY AMPLIFIER.

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FIGURE 1a